Amendment to the Claims

Please amend claims 1-10 as shown in the following listing of claims. This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) A simplified de-correlation method in TD-SCDMA multi-user detection comprising: ~~characterised in that is comprises:~~

~~a. Receive~~ receiving wireless symbols S;

~~b. Obtain~~ obtaining a channel correlation matrix R, ~~take~~ taking one part from the channel correlation matrix R and ~~get~~ getting a partial correlation matrix $\mathbf{R}_P$ of the channel correlation matrix R;

~~c. Do~~ performing an inversion operation to the partial correlation matrix $\mathbf{R}_P$, and then ~~obtain~~ obtaining a matrix $\mathbf{V}^{(m)}$ using an inverse version of the partial correlation matrix $\mathbf{R}_P$; and ~~obtain matrix $\mathbf{V}^{(m)}$;~~

~~d. Recover~~ recovering original data symbols D from the received symbols S ~~by~~ using the matrix $\mathbf{V}^{(m)}$. ~~that the to location of original data symbols D corresponds to.~~

2. (currently amended) A simplified de-correlation method in TD-SCDMA multi-user detection of claim 1, ~~characterised in that~~ wherein said partial correlation matrix $\mathbf{R}_P = \{\mathrm{r}_{i,j}\},\ \ i,j = 1 \ldots (2P+1)K$, where said partial correlation matrix $\mathbf{R}_P$ is a submatrix of the channel correlation matrix R on diagonal, said K is the user number in one time slot, and ~~wherein~~ said P is the symbols number earlier than or latter than current symbols and have influence to current symbols.

3. (currently amended) A simplified de-correlation method in TD-SCDMA multi-user detection of claim 2, ~~characterised in that~~ wherein said $\mathbf{V}^{(m)} = \left\{v_{i,j}^{(m)}\right\}$, ~~wherein~~ where $v_{i,j}^{(m)} = (\mathbf{R}_P^{-1})_{i+(m-1)K,j},\ \ i = 1 \ldots K, j = 1 \ldots (2P+1)K, m = 1 \ldots 2P+1$.

4. (currently amended) A simplified de-correlation method in TD-SCDMA multi-user detection of claim 1, ~~characterised in that~~ wherein the location of original data symbols D have three situations: ~~situation:~~

1) when $1 \le n \le P, \mathbf{V}^{(m)} = \mathbf{V}^{(n)}, \mathbf{D}^{(n)}$ can be recovered as $\widehat{\mathbf{D}}^{(n)} = \mathbf{V}^{(n)}\mathbf{S}_P^{(\mathrm{n})}$

2) when $P + 1 \le n \le N - P, \mathbf{V}^{(m)} = \mathbf{V}^{(P+1)}, \mathbf{D}^{(n)}$ can be recovered as $\widehat{\mathbf{D}}^{(n)} = \mathbf{V}^{(P+1)}\mathbf{S}_P^{(\mathrm{n})}$

3) when $N + 1 - P \le n \le N, \mathbf{V}^{(m)} = \mathbf{V}^{(2P+1+n-N)}, \mathbf{D}^{(n)}$ can be recovered as $\widehat{\mathbf{D}}^{(n)} = \mathbf{V}^{(2P+1+n-N)}\mathbf{S}_P^{(\mathrm{n})}$, said $\widehat{\mathbf{D}}^{(n)}$ is the estimation of original symbol, said n is location of chip.

5. (currently amended) A simplified de-correlation method in TD-SCDMA multi-user detection of claim 1, ~~characterised in that~~ wherein:

When $P + 1 \le n \le N - P$, received wireless symbols S can be defined as

$$\mathbf{S}_P^{(\mathrm{n})} = \left(\underbrace{\hat{S}_1^{(n-P)}, \hat{S}_2^{(n-P)}, \dots, \hat{S}_K^{(n-P)}}_{n-P^{th}\ symbols\ of\ all\ K\ users}, \dots\dots, \underbrace{\hat{S}_1^{(n)}, \hat{S}_2^{(n)}, \dots, \hat{S}_K^{(n)}}_{n^{th}\ symbols\ of\ all\ K\ users}, \dots\dots, \underbrace{\hat{S}_1^{(n+P)}, \hat{S}_2^{(n+P)}, \dots, \hat{S}_K^{(n+P)}}_{n+P^{th}\ symbols\ of\ all\ K\ users}\right),$$

~~wherein,~~ where said $\hat{S}_1^{(n-P)}, \hat{S}_2^{(n-P)}, \dots, \hat{S}_K^{(n-P)}$ is $(n\text{-}P)^{\mathrm{th}}$ symbols of all K users, said $\hat{S}_1^{(n)}, \hat{S}_2^{(n)}, \dots, \hat{S}_K^{(n)}$ is $(n)^{\mathrm{th}}$ symbols of all K users, said $\hat{S}_1^{(n+P)}, \hat{S}_2^{(n+P)}, \dots, \hat{S}_K^{(n+P)}$ is $(n+P)^{\mathrm{th}}$ symbols of all K users;

When $1 \le n \le P$, received wireless symbols S can be defined as

$$\mathbf{S}_P^{(\mathrm{n})} = \left(\underbrace{\hat{S}_1^{(1)}, \hat{S}_2^{(1)}, \dots, \hat{S}_K^{(1)}}_{1^{th}\ symbols\ of\ all\ K\ users}, \dots\dots, \underbrace{\hat{S}_1^{(n)}, \hat{S}_2^{(n)}, \dots, \hat{S}_K^{(n)}}_{n^{th}\ symbols\ of\ all\ K\ users}, \dots\dots, \underbrace{\hat{S}_1^{(2P+1)}, \hat{S}_2^{(2P+1)}, \dots, \hat{S}_K^{(2P+1)}}_{2P+1^{th}\ symbols\ of\ all\ K\ users}\right),$$

where ~~Here,~~ said $\hat{S}_1^{(1)}, \hat{S}_2^{(1)}, \dots, \hat{S}_K^{(1)}$ is 1^{th} symbols of all K users, said $\hat{S}_1^{(n)}, \hat{S}_2^{(n)}, \dots, \hat{S}_K^{(n)}$ is $(n)^{\mathrm{th}}$ symbols of all K users, said $\hat{S}_1^{(2P+1)}, \hat{S}_2^{(2P+1)}, \dots, \hat{S}_K^{(2P+1)}$ is $2P+1^{\mathrm{th}}$ symbols of all K users;

When $N + 1 - P \le n \le N$, received wireless symbols S can be defined as $\mathbf{S}_P^{(\mathrm{n})} =$

$$\left(\underbrace{\hat{S}_1^{(N-2P)}, \hat{S}_2^{(N-2P)}, \dots, \hat{S}_K^{(N-2P)}}_{N-2P^{th}\ symbols\ of\ all\ K\ users}, \dots\dots, \underbrace{\hat{S}_1^{(n)}, \hat{S}_2^{(n)}, \dots, \hat{S}_K^{(n)}}_{n^{th}\ symbols\ of\ all\ K\ users}, \dots\dots, \underbrace{\hat{S}_1^{(N)}, \hat{S}_2^{(N)}, \dots, \hat{S}_K^{(N)}}_{N^{th}\ symbols\ of\ all\ K\ users}\right),$$

where ~~wherein,~~ said [[.]]$\hat{S}_1^{(N-2P)}, \hat{S}_2^{(N-2P)}, \ldots, \hat{S}_K^{(N-2P)}$ is N-2P$^{\text{th}}$ symbols of all K users, said $\hat{S}_1^{(n)}, \hat{S}_2^{(n)}, \ldots, \hat{S}_K^{(n)}$ is n^{th} symbols of all K users, said $\hat{S}_1^{(N)}, \hat{S}_2^{(N)}, \ldots, \hat{S}_K^{(N)}$ is N$^{\text{th}}$ symbols of all K users.

6. (currently amended) A simplified de-correlation method in TD-SCDMA multi-user detection of claim 2, ~~characterised in that said~~ wherein $1 \leq K \leq 16$.

7. (currently amended) A simplified de-correlation method in TD-SCDMA multi-user detection of claim 4 [[2]], ~~characterised in that~~ wherein said P is an integer[[,]] and said N is 22.

8. (currently amended) A simplified de-correlation method in TD-SCDMA multi-user detection of claim 7, ~~characterised in that~~ wherein said P is 2.

9. (currently amended) A UE system in TD-SCDMA comprising: ~~characterised in that is comprises:~~

a correspond calculate equipment to define ~~the~~ a partial correlation matrix $\mathbf{R}_P$ of a channel correlation matrix R;

a draw out and inversed matrix equipment to define new matrix $\mathbf{V}^{(m)}$ using the partial correlation matrix $\mathbf{R}_P$; and

a matrix-vector multiplication to multiply received wireless symbols S by said matrix $\mathbf{V}^{(m)}$[[;]].

10. (currently amended) A UE system in TD-SCDMA of claim 9 ~~characterised in that~~ further comprising ~~is also comprises~~ K matching filters and K buffer storages that are connected to said K matching filters ~~which connected correspond to said matching filter~~ one by one.